

MinnKota Cyclone



National Weather Service

WFO Eastern ND/Grand Forks

Spring/Summer 2003

Our mission is to provide continuous hydrometeorological products and services, including accurate and timely forecasts and warnings, to the people of eastern North Dakota and northwest Minnesota.

The Unlucky "Nines" of 2002

by Greg Gust

Warning Coordination Meteorologist

Record summer flooding affected nearly all of the Red River of the North and Devils Lake drainage basins, including tributaries, through the summer of 2002. Of that summer's five major outbreak events, there were four events where widespread heavy rains of from 5 to 15 inches (in 24-hours) affected multiple rain gages in networks spanning multiple counties. The first of these events began on June 9 and brought an abrupt halt to the spring drought which had already run through its early stages. The June 9-11 rains were also the most widespread (see figure 1), and induced significant overland flooding in portions of several northeast North Dakota and northwest Minnesota counties.

Extreme rainfall events also occurred on June 22-23, July 9, and August 27-28. Since the 9th of both June and July had been exceptionally active weather dates, the forecasters at NWS Grand Forks anticipated another outbreak on August 9. The atmosphere too was poised for this, and decided to break loose on the evening of the 8th (early on the 9th in Greenwich Mean Time). Thus the



"Unlucky Nines of 2002" became legend.

June 9. This chain of events first began as lines of thunderstorms rolled from the Devils Lake and New Rockford area northeastward to Pembina. Subsequent lines of storms developed from Steele County, into the Grand Forks area and on to the Lake-of-the Woods. And then from the Fargo area, over Ada-Mahnomen and on to the Lake-of-the-Woods. These storms and the resultant flooding

caused the lions share of the estimated \$370M in damages sustained by the 14 counties of northwest Minnesota during the month of June. The NWS in Grand Forks issued 47 Severe Thunderstorm or Tornado Warnings and 25 Flash Flood Warnings during this event.

June 22. This storm series added insult to injury by hammering large portions of the Devils Lake Basin in North Dakota and the Wild Rice
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Unlucky “Nines” of 2002 (continued from page 1)

Basin in Minnesota, less than two weeks after the first onslaught. The NWS issued 25 Severe Thunderstorm or Tornado Warnings and 17 Flash Flood Warnings during this event.

July 9. This event mostly unfolded in area from just northeast of Mayville (Traill County) to just south of Crookston (Polk County) and just clipped the southeast corner of Grand Forks County. Numerous reports were received of rainfall overflowing from 6 inch deep rain gages and approaching 10-12 inch amounts. In the wee hours of the morning, and while rain was still falling, an alert rural resident of northeast Traill County noticed that the Amtrak rail-line had been washed out, called 911, and alerted the southbound train due to depart Grand Forks. The 3 Severe Thunderstorm Warn-

ings were overshadowed by 9 Flash Flood Warnings.

August 8. As mentioned earlier, the atmosphere was ripe for another protracted event through early August, on either the 8th or 9th. As it happened the bulk of this storm's energy came as thunderstorm winds and hail, mainly through the central Red River Valley area, and on the first anniversary of the devastating downbursts of August 8, 2001. The NWS issued 40 Severe Thunderstorm or Tornado Warnings but only 2 Flash Flood Warnings.

August 27. The last of the big soakers mainly affected an area from Minnewauken to Leeds (Benson County) and surrounding Park River (Walsh County). The NWS issued 52 Severe Thunderstorm or Tornado Warnings and 10 Flash Flood Warnings that day. Numerous reports of golfball-sized and larger hail were reported across northeast North Dakota.

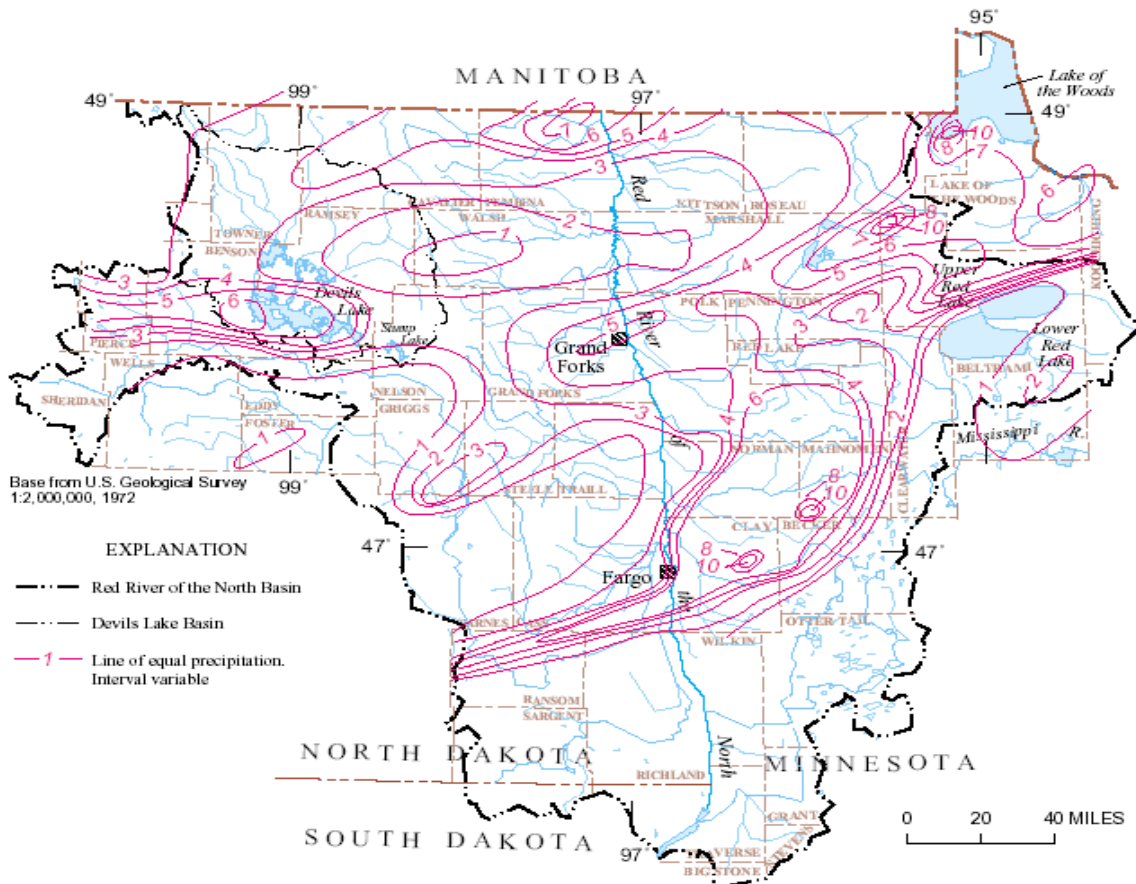


Figure 1. Aerial distribution of precipitation, in inches, for the Red River of the North Basin, June 9-11, 2002. Tributary basins most affected by this precipitation include the Wild Rice River Basin in Norman and Mahanomen Counties, and the Roseau River Basin in Roseau County, MN. (Modified from data and graphics supplied the NWS and U.S.G.S.)

The Biggest Single Events of 2002

by Greg Gust
WCM

Biggest Hail. A report of 3.0 inch hail was received shortly after suppertime, August 31, from the community of Wales (central Cavalier County). There were also several reports of 2 to 2.5 inch hail from the surrounding area that evening.

Biggest Wind. Thunderstorm downburst winds, estimated at 90-100 mph, affected a path from extreme southeast North Dakota near Fairmount, through central Wilkin County, and across south-

ern Otter Tail/northern Grant Counties during the evening of July 21. These winds uprooted trees along the route, ripped apart a small aircraft hangar west of Campbell, and collapsed a newly constructed church near Henning, from about 6 pm through 7:30 pm CDT.

Biggest Tornado. An F2 tornado touched down only briefly at around 4:45 pm CDT, June 19, about 4 miles north of Rothsay (Wilkin County). This tornado tore the roof off a 296 by 76 foot turkey barn, and spread the re-

mains downwind for better than a half mile. Fortunately, all the turkeys had been shipped out the week before the storm.

Biggest Rains. Though we had several really heavy rains to contend with (see related articles) the prize has to go to the June 9 events. These rains especially hammered Roseau, Lake-of-the-Woods, Norman, and Mahnomen Counties. This storm was selected as the Outstanding Storm of the Month for the entire nation, by the National Climatic Data Center (NCDC).

Were these record summer floods?

As a result of the four widespread heavy rain events in the summer of 2002, most of eastern North Dakota and northwest Minnesota received 6-8 inches above normal summertime precipitation. The Red River responded to each of these heavy rains in turn and actually rose above flood stage during the first three of its four summer crests. According to records kept by the NWS Grand Forks and the U.S. Geological Survey, the river gage at Grand Forks has had only 15 summertime crests above flood stage in its 120 year history, and three of these occurred during the summer of 2002. Crests occurred on June 14, June 28, July 14, and September 2. The highest crest of 38.58 feet occurred July 14, and was only eclipsed in the record books by the July 14, 1975 (43.08 feet) and May 12, 1950 (45.61 feet) summertime crests, both of which followed moderate spring snowmelt floods. Preliminary data also suggests that the Valley's total summer season 2002 runoff, as measured by the Red River gage at Grand Forks, was the highest ever recorded in the 120 year history.

SEVERE WEATHER AWARENESS WEEKS FOR 2003 ARE...

Minnesota..... April 7 - 11.
North Dakota April 28 - May 2.



LIGHTNING SAFETY by Tom Granfenauer, Meteorologist

Lightning is a common sight associated with thunderstorms. In fact, all thunderstorms produce lightning, which makes lightning awareness an important issue. When most people think about the dangers of thunderstorms the first threats that come to mind are hail, strong winds, and tornadoes. The National Weather Service defines a severe thunderstorm according these threats, and brings them to the public's attention with warnings. Lightning is often overlooked as a danger because of the fact that only about 10% of thunderstorms are classified as severe, even though all thunderstorms are capable of striking a person with lightning. Lightning causes an average of 80 fatalities and 300 injuries a year. Many of these deaths and injuries could be easily avoided through lightning awareness, which involves understanding some lightning facts, as well as lightning safety rules.

In order to be safe from lightning, we must first know some facts about lightning, and separate myth from fact. The rapid heating and cooling of the air near the lightning channel causes a shock wave that results in thunder. This means that if you can hear thunder, you are in danger of being struck by lightning. This is true even if you cannot see the lightning. Most victims are struck by lightning when caught outdoors during the summer months in the afternoon or evening hours. People are often injured or killed doing a variety of activities such as golfing, boating, bike riding, lawn mowing, and mountain climbing. Many of these incidents occur because lightning is not well understood. There are several myths about lightning that must be cleared up. First, there is a myth that if it is not raining there is no danger from lightning. The truth is that lightning can occur as far as 10 miles away from any rain. Another myth is that the rubber of the soles of shoes or tires from a car will protect a person from lightning. The truth is that this rubber provides no protection from being struck by lightning. If a car is the only shelter available from lightning, make sure that it has a steel hard top and do not touch anything metal, as it is the metal that absorbs most of the electricity from lightning. It is common myths such as these, plus many others, that allow victims to get caught off guard by lightning, making understanding the facts a major asset to lightning safety.

To be safe from lightning, the most important thing to understand is that if you can hear thunder, you can be struck by lightning. If thunderstorms are imminent, the first thing to do is postpone all outdoor activities and move into a sturdy building or car. Do not use appliances or the telephone as utility lines and metal pipes can conduct electricity. If you are stranded outside with no shelter available the most important thing to do is find a low spot, not prone to flooding, away from trees, fences, and poles. If you do start to feel a tingle squat low to the ground on the balls of your feet, making yourself as low to the ground as possible, but minimizing your contact with the ground. If you are in or near water, get to land and find shelter immediately. Water is a dangerous place to be around during a thunderstorm.

Lightning safety awareness week is June 22-28. For information on this, plus many other issues associated with lightning safety, visit www.lightningsafety.noaa.gov

PERSONAL LIGHTNING SAFETY TIPS

1. PLAN your evacuation and safety measures. When you first see lightning or hear thunder, activate your emergency plan. Now is the time to go to a building or a vehicle. Lightning often precedes rain, so don't wait for the rain to begin before suspending activities.

2. IF OUTDOORS... *Avoid water. Avoid the high ground. Avoid open spaces.* Avoid all metal objects including electric wires, fences, machinery, motors, power tools, etc. Unsafe places include underneath canopies, small picnic or rain shelters, or near trees. Where possible, find shelter in a substantial building or in a fully enclosed metal vehicle such as a car, truck or a van with the windows completely shut. If lightning is striking nearby when you are outside, you should:

A. **Crouch down.** Put feet together. Place hands over ears to minimize hearing damage from thunder.

B. **Avoid proximity** (minimum of 15 ft.) to other people.

3. IF INDOORS... *Avoid water. Stay away from doors and windows. Do not use the telephone. Take off head sets.* Turn off, unplug, and stay away from appliances, computers, power tools, & TV sets. Lightning may strike exterior electric and phone lines, inducing shocks to inside equipment.

4. SUSPEND ACTIVITIES for 30 minutes after the last observed lightning or after the last thunder is heard.

5. INJURED PERSONS do not carry an electrical charge strong enough to hurt a person and can be handled safely.

What is the Interactive Forecast Prediction System? (IFPS)

By Dave Kellenbenz
Meteorologist

IFPS is the forecasting system utilized by National Weather Service Forecast Offices (WFO) throughout the country. A variety of weather parameters are manipulated with gridded images through 7 days to produce both text and graphical forecast products. These grids are then transformed into many different products. The text forecast, or Zone Forecast Product (ZFP), is produced, as well as a Revised Digital Forecast (RDF), and a Coded Cities Forecast (CCF). In addition, forecasted images are also available on our homepage at <http://www.crh.gov/ifps.php?site=fgf>. These images can be utilized by anyone with internet access, 24 hours a day. You can get site specific forecast information from these images, and a forecast right in your own backyard from our web page as well!

All forecast images will be put into a mosaic of images